

COORDINATED DIRTY BLOCK TRACKING

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ABSTRACT OF THE DISCLOSURE

A method, system, computer system, and computer-readable medium to maintain
5 consistent, up-to-date copies of primary data that enable quick resumption of operations upon
failure of the primary node, the secondary node, and/or the network connecting nodes. The
current status of individual storage locations is tracked, indicating whether data in each
individual storage location is synchronized between a primary node and a secondary node.
Transaction logging by a transaction-logging application, such as a file system or database
10 system, is used to track individual storage locations updated with each transaction.
Acknowledgements of these updates are tracked during replication to determine whether
individual storage locations containing primary and secondary data are synchronized. This
coordinated transaction logging and acknowledgement tracking enables write operations and
replication to be performed efficiently while maintaining the information necessary to
15 resynchronize only individual storage locations when primary and secondary data become
unsynchronized.